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10/633,057	08/01/2003	Richard F. Taylor	100-22300	3600
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MARK C PICKERTING LAW OFFICE OF MARK C PICKERING P O BOX 300 PETALUMA, CA 94953-0300			EXAMINER LEWIS, MONICA	
			ART UNIT 2822	PAPER NUMBER

DATE MAILED: 09/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/633,057

Applicant(s)

TAYLOR, RICHARD F.

Examiner

Monica Lewis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 18-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the application filed August 1, 2003.

Election/Restrictions

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-17, drawn to a semiconductor resistor, classified in class 257, subclass 542.
 - II. Claims 18-20, drawn to the method for forming a semiconductor resistor, classified in class 438, subclass 516.

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In this case, the product as claimed can be made by a materially different process, for example, the structure can be formed to partially overlies a recess in the substrate and then the active layer could be formed in the recess after formation of the semiconductor structure.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the

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application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

During a telephone conversation with Mark C. Pickering on 7/19/04 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-17. Affirmation of this election must be made by applicant in replying to this Office action. Claims 18-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification

3. The disclosure is objected to because of the following informalities: a) the specification does not provide a Background of the Invention and a Brief Summary of the Invention.

Appropriate correction is required.

Content of Specification

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.
- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.

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- (d) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.

Or alternatively, Reference to a "Microfiche Appendix": See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.

- (e) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
- (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."
 - (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (f) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.
- (g) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (h) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements,

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compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

- (i) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).
- (j) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (k) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 1, 3, 9, 12, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gonzalez et al. (U.S. Publication No. 2002/0017678) in view of *Microchip Fabrication* by Van Zant.

In regards to claim 1, Gonzalez et al. ("Gonzalez") discloses the following:

- a) an active region of the semiconductor material (For Example: See Figure 15);
- b) an isolation region (26) formed in the semiconductor material to surround the active region, and isolate the active region from laterally adjacent regions (For Example: See Figure 15);
- c) a layer of insulation (30) formed on the active region (For Example: See Figure 15);
- d) a semiconductor structure formed on the isolation region and the layer of insulation so that the semiconductor structure partially overlies the active region (For Example: See Figure 15); and
- e) a doped region (62 and 64) of a second conductivity type formed in the active region, the doped region lying adjacent to the semiconductor structure (For Example: See Figure 15).

In regards to claim 1, Gonzalez fails to disclose the following:

- a) a sidewall.

However, Van Zant discloses the use of a sidewall (For Example: See Pages 514 and 515). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Gonzalez to include the use of a sidewall as disclosed in Van Zant because it aids in acting as a mask for heavier doping (For Example: See Pages 514 and 515).

Additionally, since Gonzalez and Van Zant are both from the same field of endeavor, the purpose disclosed by Van Zant would have been recognized in the pertinent art of Gonzalez.

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In regards to claims 3, 9 and 15, Gonzalez discloses the following:

a) the doped region has a length and a width, the length being substantially longer than the width (For Example: See Figure 15).

In regards to claim 12, Gonzalez discloses the following:

a) the semiconductor structure includes an opening, and the doped region lies below the opening (For Example: See Figure 15).

In regards to claim 13, Gonzalez discloses the following:

a) a portion of the isolation region lies below the opening (For Example: See Figure 15).

6. Claims 4, 5, 7, 10, 11, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gonzalez et al. (U.S. Publication No. 2002/0017678) in view of *Microchip Fabrication* by Van Zant and *Silicon Processing* by Wolf et al.

In regards to claims 4, 10 and 16, Gonzalez fails to disclose the following:

a) a pair of spaced-apart contact structures that make an electrical connection to the doped region, a current flowing into a first contact structure of the pair and out of a second contact structure of the pair.

However, Wolf et al. ("Wolf") discloses the use of a pair of spaced-apart contact structures that make an electrical connection to the doped region, a current flowing into a first contact structure of the pair and out of a second contact structure of the pair (For Example: See Pages 834-837). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Gonzalez to include the use of a pair of spaced-apart contact structures that make an electrical connection to the doped region, a current flowing into a first contact structure of the pair and out of a second contact structure of the pair as disclosed in Wolf because it aids in reducing the sheet resistance (For Example: See Pages 834 and 835).

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Additionally, since Gonzalez and Wolf are both from the same field of endeavor, the purpose disclosed by Wolf would have been recognized in the pertinent art of Gonzalez.

In regards to claims 5, 11 and 17, Gonzalez fails to disclose the following:

a) the first contact structure includes a layer of salacide and a contact that is connected to the layer of salacide.

However, Wolf discloses the use of salacide for the contact structure (For Example: See Pages 834-837). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Gonzalez to include the use of salacide for the contact structure as disclosed in Wolf because it aids in reducing the sheet resistance (For Example: See Pages 834 and 835).

Additionally, since Gonzalez and Wolf are both from the same field of endeavor, the purpose disclosed by Wolf would have been recognized in the pertinent art of Gonzalez.

In regards to claim 7, Gonzalez fails to disclose the following:

a) the semiconductor structure and the semiconductor region are polysilicon.

However, Wolf discloses the use of polysilicon (For Example: See Pages 821 and 822). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Gonzalez to include the use of polysilicon as disclosed in Wolf because it aids in withstanding high temperatures (For Example: See Pages 821 and 822).

Additionally, since Gonzalez and Wolf are both from the same field of endeavor, the purpose disclosed by Wolf would have been recognized in the pertinent art of Gonzalez.

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7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gonzalez et al. (U.S. Publication No. 2002/0017678) in view of *Microchip Fabrication* by Van Zant and Kalnitsky et al. (U.S. Patent No. 6,475,873).

In regards to claim 6, Gonzalez discloses the following:

a) an active region, an isolation region, a layer of insulation formed on the active region, and a doped region (For Example: See Figure 15).

In regards to claim 6, Gonzalez fails to disclose the following:

a) a semiconductor region formed on the isolation region so that the semiconductor structure partially overlies the active region.

However, Kalnitsky et al. ("Kalnitsky") discloses a semiconductor region formed on the isolation region so that the semiconductor structure partially overlies the active region (For Example: See Figure 2e). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Gonzalez to include a semiconductor region formed on the isolation region so that the semiconductor structure partially overlies the active region as disclosed in Kalnitsky because it aids in providing a controlled dielectric thickness (For Example: See Abstract).

Additionally, since Gonzalez and Kalnitsky are both from the same field of endeavor, the purpose disclosed by Kalnitsky would have been recognized in the pertinent art of Gonzalez.

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Allowable Subject Matter

8. Claims 2, 8 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 571-272-1838. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956

ML
September 2, 2004



Mary Wilczewski
Primary Examiner